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SCHEDULE OF MEETINGS

2-8 October	**Expert Committee on the International Pharmacopoeia, Geneva**
7-12 October	**Study Group on Recommended Requirements for Biological Substances, Geneva**
7-12 October	**Joint FAO/WHO Expert Committee on Brucellosis, Lima**
14-19 October	**Expert Committee on Addiction-Producing Drugs, Geneva**
14-26 October	**Rural Health Conference, New Delhi**
16-29 October	**Study Group on Social and Preventive Medicine, Manila**
21-26 October	**Committee on International Quarantine, Geneva**
21-26 October	**Study Group on Mental Health Aspects of Peaceful Uses of Atomic Energy, Geneva**
22-29 October	**Joint FAO/WHO Expert Committee on Nutrition, Rome**
28 October-2 November	**Expert Committee on Training of Health Personnel in Health Education of the Public, Geneva**
4-9 November	**Study Group on Ataractic and Hallucinogenic Drugs in Psychiatry, Geneva**
4-15 November	**Seminar on the Nurse in the Psychiatric Team, Noordwijk Aan Zee, Netherlands**
6-13 November	**Conference on Public Aspects of Air Pollution, Milan**
18-23 November	**Expert Committee on Insecticides, Geneva**
18-23 November	**Expert Committee on Air Pollution, Geneva**
25-30 November	**Expert Committee on Professional and Technical Education: The Introduction of Radiation Medicine into the Undergraduate Medical Curriculum, Geneva**
25 November-4 December	**Seminar on Veterinary Public Health, Warsaw**
26-28 November	**Fifth Borneo Inter-territorial Malaria Conference, Labuan**
2-7 December	**Study Group on the Preventive Aspects in the Teaching of Physiology, Geneva**
2-20 December	**Environmental Sanitation Seminar, Zone II, Singapore**
9-14 December	**Expert Committee on Health Statistics, Sub-Committee on Cancer Statistics, Geneva**
11-13 December	**Antimalaria Co-ordination Board, Bangkok**
13-20 December	**Malaria Symposium, Bangkok**

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MAN'S SPIRITUAL AND SCIENTIFIC LEGACY FROM ROSS

Extracts from an address by Dr. M. G. Candau, Director-General of the World Health Organization, on the celebration at the Ross Institute, London School of Hygiene and Tropical Medicine, 13 June 1957, of the hundredth anniversary of the birth of Sir Ronald Ross.

It is fitting that the World Health Organization should join in the celebration of the hundredth anniversary of the birth of Sir Ronald Ross... There is no need in this circle of admirers of Ross to recall in detail the essential phases of his glorious career as a malariologist. These, I am sure, are known to all of you. I am thinking of the years of painstaking labour Ross spent in India between 1895 and 1899 on his quest for the solution of the malaria problem, and which led to the momentous discoveries of identifying the carrier and the way of transmission of the disease. I am thinking also of the three feverish years, from 1899 to 1902, during which Ross spent the best part of his energy demonstrating in West Africa and in Egypt the practical value of his theory of control of malaria or, as he put it, " to apply the solution—to apply it immediately—to the saving of human life on the large scale ".

Reading his memoirs recently, I was struck by the admirable combination of simplicity, modesty, directness and unbounded confidence with which Ross described the great moments of his successful battle against what had for centuries been the most baffling and the most devastating scourge of mankind.

This is what he wrote when recalling the 20 August 1897, to which he later referred as Mosquito Day: " We had to discover two unknown quantities simultaneously—the kind of mosquito which carries the parasite, and the form and position of the parasite within it. We could not find the first without knowing the second, nor the second without knowing the first. By an extremely lucky observation I have now discovered both the unknown quantities at the same moment. The mosquito was the Anopheles, and the parasite lives in or on its gastric wall and can be recognized at once by the characteristic pigment. All the work on the subject which has been done since then by me and others during the last 25 years has been mere child's play which anybody could do after the clue was once obtained." And this is what he wrote to Manson in July 1898 after his conclusive experiments with avian malaria: " I feel that I am *almost* entitled to lay down the law by direct observation and tracking the parasite step by step—malaria is conveyed from a diseased person or bird to a healthy one by the proper species of mosquito and is inoculated by its bite "; and he added: " The door is unlocked and I am walking in and collecting the treasures."

In saying this he was much too optimistic. As most geniuses in various fields of human endeavour, Ross was ahead of his time and his truly revolutionary concepts were misunderstood or not adequately understood, even by some of his closest friends. The fact is that, some 50 years before the advent of DDT and other insecticides, Ross established the basic principles on which the malaria policy of WHO was to be founded. In the first place, he definitely recognized the need to concentrate efforts on prevention rather than on cure of the disease. " It is evident ", he wrote in February 1899, " that the study of malaria has now entered on the third and last phase—prevention. That is, we must find out how to exterminate the malaria-bearing species of mosquito."

He believed that antimalaria activities could be successful only if conceived as an integral part of general sanitation work.

" The question ", he stated, " which is the best method for dealing with malaria in any place or country is a sanitary question to which medicine, parasitology, and entomology are ancillary." He recognized both the cost of malaria and the great economic advantages its elimination would bring not only to the region immediately affected, but also to the rest of the world. " For crowded areas ", he said, " by far the most economical measure now known to us is constant mosquito-reduction (not necessarily extermination) practised as a part of ordinary sanitary work—not only for a month or a year, but forever. It costs money, of course; but usually less than the sickness costs, and far less than the other measures wrongly applied." Speaking to the Liverpool Chamber of Commerce on the political and economic meaning of his work, he made that truly visionary statement: " It may even happen that such a wild idea as killing mosquito-grubs to prevent malaria may assist in giving to civilization the gift of another half a world—the tropics. We never know, when we plant one of the seeds of science, into how great a tree it may grow some day." And while on certain occasions he himself seemed to be dazed by the magnitude of the opportunity created by his discoveries, I submit that fundamentally Ross was a precursor, not of the concept of control, but of the eradication of malaria. It is indeed significant that the title chosen for his inaugural lecture at the University College of Liverpool was " The possibility of extirpating malaria from certain localities by a new method ", and while the meaning of the word " extirpating " can be questioned, there can be no doubt whatsoever about the intentions of Ross when, on his return trip to Europe in 1899, he projected on a world-wide scale the experiments he had carried out in India, and concluded by saying: " In a few more months, perhaps in a year, or in two years, the death-dealing pests will begin to come under control, will begin to diminish, even to disappear entirely in favourable spots; and with them, slowly, the ubiquitous malady would fly from the face of civilization—not here or there only, but almost throughout the British Empire—nay, further, in America, China and Europe. Not disappear entirely of course (perhaps an impossible ideal), but be at least banished from the centres of civilization."

I am convinced that if Ross were alive today, and if he knew the means and techniques available to the modern malariologist, he would fight for the concept of eradication with the same vigour with which he advocated in his time the principle of control operations. To a very considerable extent, therefore, it was the spiritual and scientific legacy left by Ross that inspired the World Health Organization when, in May 1955, it decided to " take the initiative, provide technical guidance, and encourage research and co-ordination of resources in the implementation of a programme having as its ultimate objective the world-wide eradication of malaria ".

I am sure that he who repeatedly declared that help from outside could only be given in the form of what he called " object lessons " and that the main work must be left to the local authorities, would have approved of the various forms of assistance through which WHO has been promoting control and eradication programmes in more than 50 countries or territories. I would like to mention, in particular, the holding of conferences and of meetings which, in our experience, is one of the most fruitful ways of disseminating technical information and of stimulating action, both on country and on inter-country levels. In the last few years, around 15 conferences and meetings have been sponsored by WHO in practically all regions. . .

Regional malaria advisers and short-term consultants employed by WHO play another important role in providing countries with the technical advice they need to solve their malaria problems. You may be interested in the new type of teams set up in 1956, known as malaria eradication advisory teams. These consist of a malariologist, an entomologist and two laboratory technicians, and are provided with transport and laboratory equipment. These teams, which have already

visited Afghanistan, Ceylon, Iran and Taiwan, are required to give guidance on a great variety of subjects, such as the interruption of residual spraying operations, the setting up of a surveillance system, the question of using mass chemotherapy or chemoprophylaxis in addition to spraying operations. The teams may also deal with specific problems which arise when, for some reason, insecticides do not yield the expected results, or when assistance is needed in the objective assessment of a given campaign. The *Anopheles gambiae* problem is being investigated by a special research and advisory team which makes use of all the classical methods and of cytogenetic methods and radioisotopes as well.

This brings me to the fundamental role research plays in all major activities promoted by WHO and, in particular, in those relating to the fight against malaria. I do not need... to emphasize that efforts aimed at the worldwide eradication of malaria must be supported by a well co-ordinated programme of research, the problems must be foreseen and studies must be initiated, wherever possible, before the problems themselves arise. The work of co-ordination in this field is WHO's basic responsibility and if the Organization is achieving a certain measure of success, it owes this to the contribution of many individual members of the Expert Advisory Panels on Malaria and on Insecticides, and of numerous research institutes, which have been investigating a number of practical problems concerning the development of anopheles resistance to insecticides...

[One] essential line of investigation concerns drugs, which, while of little use in simple malaria control schemes, are necessary in eradication programmes, particularly in the final stages, when a radical cure of remaining infections in the human population must be achieved. The administration of a sporontocide such as pyrimethamin to prevent infection of mosquitos could be a valuable complement to a residual spraying programme. We are now hoping to obtain the collaboration of suitable institutes in order to find out how long a simple dose of such a drug could prevent the development of infective sporozoites in vector anophelines fed on gametocytes carriers.

The work undertaken under WHO sponsorship by the United States Public Health Service on administration of pyrimethamine or chloroquine in salt used in the daily diet has largely confirmed the results of Piyoth, who originated this method using chloroquinized salt. The use of medicated salt for mass malaria prophylaxis may be a valuable method of control in certain special circumstances.

So much for the techniques WHO has been using to promote the cause of malaria eradication. The question which arises at this point, and which, I am sure, you will expect me to answer, is: what practical results have been achieved ? Is malaria in fact being eradicated from the world ? I believe that available records give an encouraging reply. At the end of March this year, there were no less than 63 countries and territories in which eradication had been accepted as the goal of antimalaria activities. In 10 of these, eradication had practically been achieved, in 15 others eradication programmes were well advanced, in 31 programmes had been initiated and in the remaining 7 they were in the planning stage.

These recent estimates, made by Dr Paul Russell, give the population of malarious regions of the world as 1 070 280 000; 680 361 000, or at least 57% of this population, live in the 63 countries mentioned, in which eradication of the disease can be expected to be achieved within a comparatively few years.

It can also safely be claimed that mortality and morbidity due to malaria are today not more than one-third of what they were before the attack on the disease through the vector, by means of residual insecticides, began some twelve years ago.

In the Americas, where *all* countries are now engaged in or committed to eradication programmes, the disease has already been practically eradicated in the United States, Chile, Antigua, French Guinea, Martinique and Puerto Rico. Very good progress is

being made in other countries, including Argentina, British Guinea, Guadeloupe, the Canal Zone of Panama, Tobago and Venezuela.

In Europe, malaria has ceased to be a problem in Corsica, Cyprus and Italy. At the Malaria Conference for countries of South Eastern Europe, held in Belgrade three months ago, it was announced that it was expected that no new cases of malaria would occur three years from now in Romania and in the USSR. It is hoped that the same situation will obtain in Bulgaria, within approximately five years. Eradication programmes are also under way in Albania, Turkey and Yugoslavia, and despite the development of resistance in vectors, Greece is well on the road to achieving eradication. We hope that Portugal and Spain will very soon undertake similar programmes.

In the Eastern Mediterranean Region, excellent progress is being recorded in the Lebanon. Work has also started in Iran, Iraq and Syria, while for Egypt, Israel and Jordan the programmes are now in the planning stage.

In Asia, the Antimalaria Co-ordination Board, established for Burma, Cambodia, Laos, Viet Nam and Thailand, will accelerate operations in all these countries. Thailand is already approaching its goal of eradication. This is also true of Ceylon and Taiwan, while a good start has been made in Afghanistan, the Philippines and India. The latter country with the largest malaria problem in the world, since it includes around 300 million people exposed to the risk of the disease, is now planning to convert its national malaria control organization into one aimed at eradication by stages.

Progress is, of course, less spectacular in Africa, although in this part of the world too eradication has been achieved, in Mauritius, while the programmes are quite well advanced in both La Réunion and Swaziland. However . . . in Africa the intensity of transmission is greater than anywhere else in the world, and there are specific technical problems to solve. Therefore, while control schemes, some of them covering large areas, are being undertaken in many African countries and territories, it is necessary that intense field studies be undertaken in pilot testing zones within these schemes. There is no reason to suppose that with this kind of approach the answers to those problems cannot be found, nor that the use of insecticides, perhaps coupled with chemotherapy, will not be crowned with the success it has known elsewhere.

As you can see, we have gone a long way on the road which the discoveries of Ross opened up for us some 60 years ago. I can think of no better way to honour the memory of Ross than to recall the remarkable victories achieved all over the world against his arch enemy: the malaria-carrying mosquito. I wish he could have lived long enough to see how in the Terai, an area well known to him, where the first WHO demonstration team operated, malaria was brought under control and large resettlement schemes were established. And what would have been his satisfaction to know that India, the country where he did the outstanding work for which we honour him today, has been actively engaged for the last few years in a national programme which is now orientated towards the complete eradication of malaria...

Deratting and Deratting Exemption Certificates

A supplement to WHO's *Weekly Epidemiological Record* (No. 36, 1957, Suppl. 3) contains a list of the ports approved and designated under the International Sanitary Regulations for the issue of Deratting Exemption and/or Deratting Certificates, as on 6 September 1957, together with information on conditions and facilities for deratting at a number of the ports mentioned. Any future amendments to this list, which covers ports in 95 countries and territories, will be published in the *Weekly Epidemiological Record.*

TUBERCULOSIS

Statistics just published by WHO indicate that, of all the infectious and parasitic diseases, tuberculosis remains in the lead. Between 1950 and 1955, it accounted for three-fourths of all deaths due to these diseases occurring after the age of 15.[1]

True, BCG vaccination has some effect in reducing incidence but this measure, however widely applied, is not in itself enough to bring the disease under control. In vast areas of the world the control of tuberculosis may well eventually depend on the widespread use of cheap drugs for therapeutic and prophylactic purposes.

As is well known, the development in recent years of the three techniques—immunization, chemotherapy and chemoprophylaxis—has led to the discarding of many of the traditional methods of control and has opened up the way for tackling this problem on a public health basis. But the difficulties are still manifold and WHO staff, working in all corners of the world, are constantly seeking the answers to many of the questions now being posed.[2]

In January of this year, a number of tuberculosis workers met in New Delhi for an informal exchange of views, information and experience on all aspects of tuberculosis control. The meeting took place following the XIVth International Tuberculosis Conference, which was also held in New Delhi.

Concept of tuberculosis control

The discussions ranged around three basic ideas that may be taken as the new concept of tuberculosis control.

The first of these concerns the attitude taken towards the disease itself. In the past, the social aspects of the tuberculosis problem have tended to be over-emphasized, thus engendering a passive approach to control in the face of poor living standards. But the basic fact to be kept in mind about tuberculosis is that it is a communicable disease, the attack on which should be of the dynamic character appropriate to the control of all communicable diseases. The control measures instituted should be based on an intimate knowledge of the disease's epidemiology with a view to interrupting the natural course of events at the stage that will prove most effective. This, in effect, is the approach of WHO.

The second idea—that tuberculosis control today is no longer mainly a clinical problem but has become a public health problem and should be dealt with as such—was taken as a statement of fact. Attention was drawn, however, to the need of maintaining a proper balance between attention to the community and attention to the individual. It was recognized that this balance would necessarily differ in individual countries according to the prevailing social conditions.

Another question that came up concerned the extent to which clinical judgement is necessary in the diagnosis of pulmonary tuberculosis and the extent to which technicians can replace doctors in this work. The conclusion reached was that, given the lack of doctors, technicians under medical supervision could well be entrusted with the carrying out of simple routine techniques.

The third idea emphasizes the need for reliable data to form the basis in planning control programmes and evaluating their results. In many of the countries receiving WHO assistance, the statistics on tuberculosis mortality and incidence are not sufficiently accurate for this purpose.

Tuberculin testing

The tuberculin test is still of importance in survey and diagnostic work in areas that

[1] *Epidem. vital Statist. Rep.* 1957, 10, 351-412 (No. 8)

[2] A collection of articles on this problem will be found in *Bull. Wld Hlth Org.* 1957, 17, 181-340.

have not previously been covered by BCG vaccination campaigns.

There was general agreement that the Mantoux test with 5 T.U. PPD should be continued as the standard method for tuberculin testing and that, where assessment indicates the occurrence of non-specific sensitivity, a borderline of 10 mm induration is probably the most effective one for selection of persons for BCG vaccination.

The Tuberculosis Research Office in Copenhagen (which is part of the WHO Headquarters services) is continuing its efforts to find an effective means of maintaining the stability of tuberculin dilutions—a prerequisite to standardization of the product.

Examination for tubercle bacilli

Demonstration of tubercle bacilli by culture following the discovery of X-ray pathology in the lung is, the meeting agreed, an adequate diagnostic method and its recommendation by WHO is very proper. Nevertheless, governments find it difficult on economic grounds to act on this recommendation. The alternative of direct microscopic examination of sputum after staining by the Ziehl Neelsen method is simple, cheap and speedy but is subject to a wide margin of error. The Tuberculosis Research Office is engaged in determining optimum methods for sputum collection and slide examination and is studying the possibilities of direct microscopy as against culture of the bacilli.

If national tuberculosis services are to be widely expanded, it will be necessary, the meeting considered, to rely to a great extent on direct microscopy. This should be subject, however, to constant check against culture results from specimens selected by random sampling methods. It was also thought that the possibility of consistently high-quality culture work at lower cost could be brought about by centralizing media production within a country.

In connexion with the experimental work on standard methods, arrangements have been made with four leading laboratories in Europe and one in the United States of America to have sputum specimens from various countries examined with a view to typing and studying the characteristics of the tubercle bacilli found.

BCG vaccination

A conference of BCG vaccine producers from about 30 countries which took place in Geneva in October 1956 came to the conclusion that evaluation of the potency of BCG vaccine must be based on the degree of allergy produced in children. There is definitely some correlation, too, between the degree of allergy and the degree of protection produced. Work at the Tuberculosis Research Office has shown that allergy production took from 8 to 10 weeks in newborns as against 4 to 6 weeks in older children. The high proportion of complications found in new-borns following BCG vaccination is mainly due to faulty vaccination techniques. At present, however, the use of oral vaccination is not recommended by WHO because of lack of controlled investigations.

The incidence of low-grade non-specific sensitivity in a population can—it was stated—be demonstrated by special tuberculin testing techniques. The prevalence of non-specificity is a determining factor in selection of persons for vaccination. It is now thought that there is some evidence that low-grade sensitivity gives some protection against infection.

Chemotherapy in tuberculosis

Two distinctly opposing views emerged from the discussion on chemotherapy. One body of opinion, holding that developed resistance to isoniazid (INH) has the same importance as resistance to, say, para-aminosalicylic acid (PAS) or streptomycin, advocated combined chemotherapy against tuberculosis. The other school of thought regarded resistance to INH as comparatively unimportant and was in favour of single drug therapy. The extreme of this view was that INH treatment of tuberculosis cases in

a community should be continued until all excreted bacillary strains become resistant.

Some doubt was apparent on whether, even assuming better results, the extra cost involved in combined chemotherapy is justified.

WHO, in continuing to recommend the use of INH alone in its field studies, takes account of this economic factor. In the meantime, the Organization is endeavouring to obtain as much information as possible from sources all over the world on resistance of tubercle bacilli to INH, since it is on this factor that the success or failure of the mass attack on tuberculosis, as at present conceived, may depend.

Prevalence surveys

The meeting was firmly of opinion that the only reliable means of obtaining the data needed as a basis for the planning of control programmes is by the prevalence survey. As has already been said, available statistics on tuberculosis mortality and incidence are often not sufficiently accurate for this purpose.

The prevalence survey consists of selecting a population by random sampling methods and examining, if possible, every member of it. Any groups coming within the sample that may be inaccessible should be well defined and their numbers excluded from the calculations so as to avoid a bias in the final estimates. Definitions and operational rules must be laid down before the survey starts, as well as procedures to be adopted and types of examinations to be made, together with a definite allocation of responsibility for every operation involved.

An initial pilot survey is essential in order to determine the sample population size, to try out the records system and to train operators. The services of a trained statistician are needed from the outset to ensure that the survey will yield reliable results.

Execution of control programmes

For economic and technical reasons it is seldom possible for a country to attack the tuberculosis problem in all parts of its territory simultaneously. The meeting therefore favoured division into areas of high, medium and low prevalence, so that efforts can in the first instance be concentrated where they are most needed.

This idea has already been put into practice in India. The attack is being focused on the cities where prevalence of the disease is highest. At the same time, BCG vaccination is being carried out in the areas of lower prevalence. The other countries of the South-East Asia Region have been encouraged by the efforts in India to envisage prevalence surveys and WHO will probably provide the necessary technical help.

Control methods and techniques

Two ways for attacking tuberculosis on a mass scale were described. The first consists of establishing local centres, with facilities for diagnosis and treatment. The second is to use mobile teams to carry out mass miniature X-ray examinations for case-finding, followed up by domiciliary treatment.

No attempt should be made at establishing fine diagnostic criteria. The results should be classified merely into two categories: normal and abnormal. All persons coming within the latter group should be given treatment. Cases with lesions visible by X-ray should be treated over a period of one year, after which a check-up by sputum examination and X-ray can be made to determine whether further treatment is needed. The fact that no detailed clinical diagnosis has been made need not delay treatment, since chemotherapy causes the minimum of interference with the normal life of the patient.

A mobile X-ray unit should be able to make about 40 000 examinations a year, out of which some 1000 cases might be found. One home visitor, at an average of 20-25 visits per working day, should be able to take care of some 100-120 homes.

Doubts were expressed about the feasibility of this second scheme, which is advocated by the WHO Headquarters services. Some of the participants thought the treatment, at

least, would have to be carried out by home visitors operating from fixed centres. But it was explained that the idea behind the scheme is to ensure that work is started without delay in areas of high prevalence where district centres do not as yet exist.

Personnel

The shift of emphasis in tuberculosis control from the clinical to the public health approach has necessitated a change in the qualifications and experience needed in a medical officer dealing with this disease. He needs to be trained in sociology and public administration, epidemiology, including research, statistics, communicable diseases with emphasis on bacteriology, and tuberculosis control in all its aspects (planning, organization and execution of control campaigns, and the relevant technical considerations). This list met with the full approval of the participants.

It may be recalled in this connexion that the WHO Expert Committee on Tuberculosis has recommended that institutes be set up in each of the WHO regions where training in all these branches may be given.[3] So far, it has not proved possible to put this into practice.

With regard to staff for domiciliary visiting, the view was expressed that, where little bedside care is needed, home visitors with one year's training in nursing and two years' training in social work are better for this purpose than trained nurses.

WHO activities

One of the objectives of the meeting was to refresh the participants' knowledge of WHO's approach to this problem and to give them a comprehensive view of the many-sided activities covered by the Organization's work on tuberculosis.

The basic aim of all WHO action is to assist national health authorities to make the maximum impact on the tuberculosis problem in their respective countries. For purposes of description, two main categories of activity may be distinguished, under the titles of direct and indirect assistance to governments.

The first of these, direct assistance, takes a variety of forms which may be grouped under the following general headings: general advice in tuberculosis control; field projects for demonstration, training and teaching purposes; training of national staff to carry on the work through fellowships and teaching and training courses. This work comes under the WHO Regional Offices.

Indirect assistance, on the other hand, is the responsibility of the Headquarters services, which are mainly concerned with the study of problems in diagnosis, and methods and techniques for treatment and control of the disease.

This work has many facets. Some of the research being undertaken by the Tuberculosis Research Office has already been mentioned above. It is noteworthy that the Office's efforts to work out standards for tuberculin testing in mass surveys are nearing completion and its work is being actively pursued on the devising of standard techniques for tuberculin testing, sputum examination, and interpretation of X-ray examinations, as well as standard methods for selection of individuals for examination in sample surveys.

Of a different character are the attempts to get makers to produce simple and less expensive X-ray equipment adapted for use in tropical areas.

Another aspect is concerned with making generally available the experience gained in tuberculosis control in individual countries. In order to draw the maximum benefit from the lessons learned, it is recognized that results should be comparable on an international basis. The Headquarters services have been called upon to devise standard methods and techniques for control operations that can be used everywhere, thus ensuring a higher degree of comparability than is at present possible.

[3] *Wld Hlth Org. techn. Rep. Ser.*, 1950, 7, 12

RESULTS OF THE YAWS CAMPAIGN IN NIGERIA, 1956*

Nigeria is a large country on the west coast of Africa, approximately 600 miles square in size. It is divided into a northern two-thirds (Northern Region) and a southern third. The latter is roughly divided in two, the Western and Eastern Regions. The total population is about 31 million, with about 17, 6½ and 8 million respectively in the Northern, Western and Eastern Regions. Yaws occurs in a large area with its highest prevalence about the point where the three regions meet, and extending south, west and east.

Reduction in yaws prevalence

In 1956 over a million persons were examined and treated during initial treatment surveys in the Nigerian campaign, and a population half as large again was covered during resurveys. The yaws campaigns in Nigeria and the British Cameroons have been very closely related throughout.

The total cumulative figures up to the end of 1956 are 2 565 000 for initial treatment surveys and 2 028 000 for resurveys. At the initial treatment surveys a high percentage of the population is examined (86.2%). In addition to seeking and treating yaws other medical work is undertaken such as looking for leprosy and sleeping sickness and taking the necessary action to have patients treated; smallpox vaccination is also carried out.

The Governments of the three regions are in many ways independent of the Federal Government sited in Lagos. The yaws activities are similarly divided into separate campaigns. The campaign which, in some ways, might be regarded as the most favoured is the one in the Eastern Region [1] with a population of about 8 million. This has developed more fully than the others, perhaps because it is near the capital city of the Region, Enugu, and also because of certain favourable conditions, including high density of population, good roads permitting all villages to be reached by car, the relatively short distances of the villages from the headquarters of the units, the possibility of

* Prepared by the Venereal Diseases and Treponematoses Section, World Health Organization, Geneva

[1] Further details of this project will be found in *Bull. Wld Hlth Org.* 1956, 15, 911-935

TABLE I. POPULATION, POPULATION AT RISK, AND PERSONS EXAMINED AND TREATED TO END OF 1956

Region	Population (millions)	Population at risk of yaws * (millions)	Persons examined and treated (millions)
Eastern Region	8	7.2	1
Western Region	6.5	5	1
Northern Region	17	2.5	0.5
British Cameroons	1.4	0.8	0.09
Totals	32.9	15.5	2.59

* These figures are approximate and need checking by sample surveys which are being made. It is probable that in most of the affected areas the prevalence of clinically-active yaws is low.

field work all the year round, and excellent co-operation (including financial participation) from the local authorities and the people. Since the beginning of operations able and active WHO Senior Medical Officers have played an important part in gathering together the loose ends of the campaigns and co-ordinating the work. Preliminary surveys have also been made of populations where the frequency of yaws is less well known so as to obtain data to guide the planning for developing the campaign. The stage is being reached when most of the areas where the prevalence of total clinically-active yaws was over 10% will have been dealt with and be in the later stages of resurveys. In the Eastern Region the work is becoming integrated into the activities of the newly-built rural health centres. In the other Regions, where rural health centres are not so developed, resurveys may have to be continued longer until some adequate and economical form of surveillance can be established in the areas concerned. At resurveys only patients with active disease and the contacts of infectious patients are treated.

Where the prevalence of clinically active yaws is over 10%, in addition to the treatment of all active cases, the remainder of the population is given half doses as " latent cases and contacts ". Following this total mass treatment, great reductions in the prevalence of active yaws are found at resurveys six and twelve months later. This has been measured in the Eastern and Western Regions, and in the Cameroons, by the changes in prevalence of infectious cases. Falls from a maximum of about 7% of infectious cases (in the population examined) to under 1% have been usual after six months and further decreases have generally been found after twelve months (see Fig. 1, p. 311). This represents the almost complete breaking of transmission so that new infections of yaws in children are very scanty or absent.

The achievements as indicated by the data for 1956 are: reduction in total active yaws from 17% to 0.7%; reduction in infectious yaws from 5% to 0.36%; total number of persons examined at initial treatment surveys, 1 000 996; and at resurveys, 1 563 568. It must be stressed that the data are from all Regions and that the resurvey data do not necessarily refer in all instances to the same population as the initial treatment survey data.

Late and non-infectious cases are, of course, also treated at the initial surveys and these too become greatly reduced. Such cases occur generally in adults and as in many places they most frequently affect the palms of the hands and soles of the feet another benefit of the campaign is immediately seen in a peasant population which cultivates the soil with hand tools. The resulting increased food production has widespread significance for the family without any obvious great increase in population because yaws is not a killing disease.

The decrease in late ulcers may also have epidemiological importance in the later stages of an anti-yaws campaign because there is some evidence that, though not highly infectious, they may be slightly so. Dr F. Nery Guimarães has recently stated in an unpublished work that he has infected human volunteers with material from such ulcers.

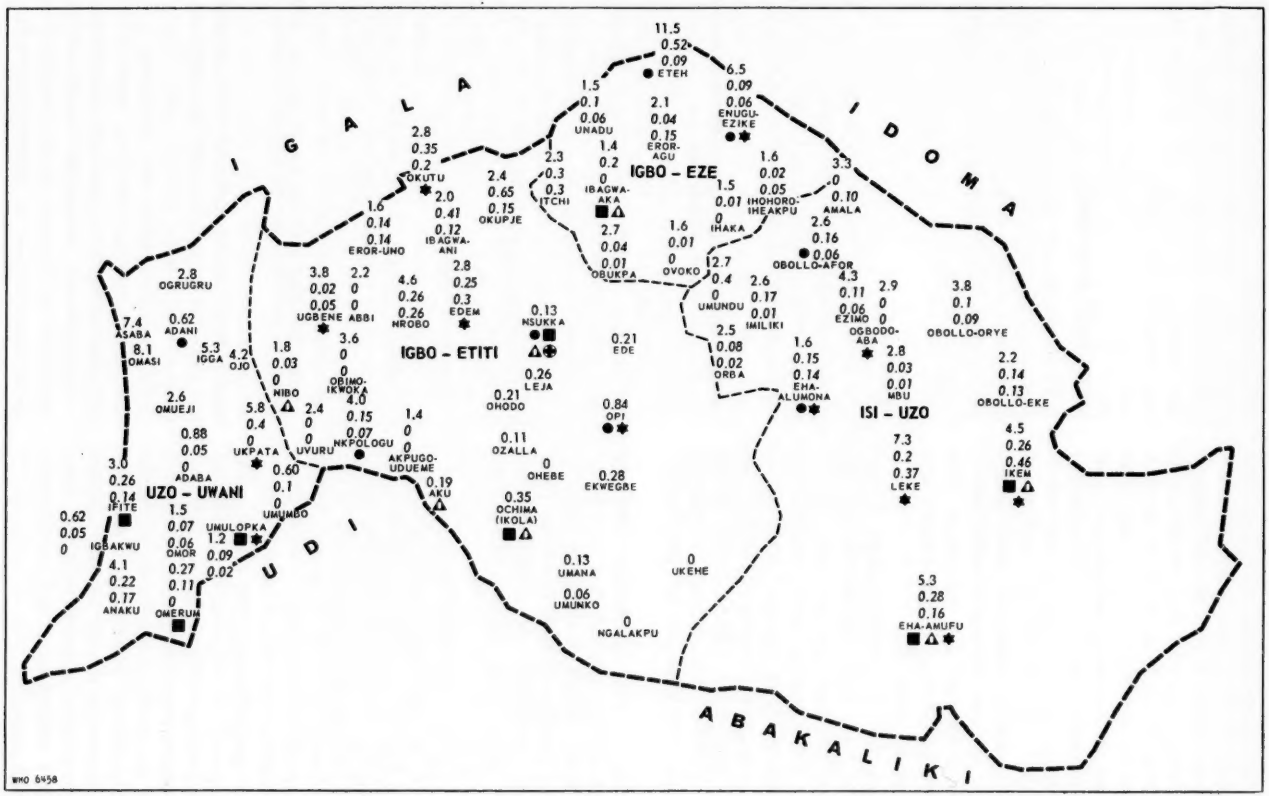
Development of rural health services

There is abundant evidence of the immediate benefits of total mass treatment and there are good reasons for adopting this policy when the prevalence of yaws is high. The people themselves are impressed by the disappearance of yaws and in the Eastern Region the combination of a progressive people and wise advice has resulted in the development of a rural health service based upon rural health centres in the areas where the campaign has been carried out. These centres and the co-ordinated service had been independently planned before the campaign began, but lack of regional funds had prevented their implementation.

Following the mass treatment phase of the yaws campaign the locally-elected district councillors, that is, Africans elected by African villagers, voted money to build and partly staff these rural health centres. The Eastern Region Government undertook to

FIG. 1. PREVALENCE OF INFECTIOUS YAWS IN NSUKKA DIVISION, EASTERN NIGERIA *

FIG. 1. PREVALENCE OF INFECTIOUS YAWS IN NSUKKA DIVISION, EASTERN NIGERIA *



● *Local health centres* ■ *Dispensaries* △ *Maternities* ⊕ *Voluntary hospitals* ✱ *Leprosy clinics*

* *For each locality the upper figure represents the percentage of infectious yaws cases among the population examined at the initial treatment survey and the lower two figures represent the percentage at the first and second surveys, which took place at intervals of six months. Where only one figure is given, no resurvey was carried out.*

subsidize these undertakings and to provide certain staff on the condition that the centres conformed to certain standards, the general bearing of which was that their work was to be taken into the villages and to be of a preventive and supervisory kind, and that they were not to become completely occupied with curative treatment, often of unimportant complaints such as coughs and colds, abrasions, etc. By the end of 1955 seven such local health centres had been established in the division of Nsukka which has a population of 450 000. By the end of 1956 there were eight district health centres and several more are planned.

The yaws scouts, simply-trained village youths who have been responsible for the field work of the resurveys, are being further trained for wider public health activities as multi-purpose "health visitors" attached to the health centres at the rate of roughly one per 10 000 population. Each health centre will cover 50 000-60 000 people. The district councils have voted money for this further training.

So satisfactory has the Nsukka Division rural health scheme proved that it is being developed into a demonstration and training area for the training of staff for other rural health units throughout the Eastern Region of Nigeria, where other rural health centres are already planned.

Thus it will be seen that the two main purposes of an anti-yaws campaign have been admirably achieved in one division of Eastern Nigeria. The first is the great reduction in the prevalence of active yaws in the area of the campaign—that is, it is no longer an important disease and there is every prospect that its eradication will soon be achieved, through the surveillance system set up. The second purpose is to improve the health and standard of living of the people. This has been brought about through an awakened activity of the people themselves in recognizing the need and assuming the responsibility for the establishment of rural health centres with a higher standard of work than the previous dispensaries and with wider public health activities.

There is every possibility that with further sound advice and assistance this awakening will spread to other than medical fields and the standard of living will develop along lines suited to the people.

International assistance

At practically all stages of these extensive operations the excellent work of the Regional Government officers has been assisted by advice from WHO and by essential supplies from UNICEF.

Assessment

It is reported that in 1956 the cost per person examined at initial treatment surveys and resurveys was US $0.13 and for each person treated US $0.33. The PAM dosage used is that recommended by WHO in which the dose for a patient with clinically-active disease is 1.2 mega units (4 ml). There is every reason to believe that the money spent from international funds has, together with national expenditure (see Table II), produced very satisfactory immediate results and has awakened an activity in the people themselves that will play an important part in the

TABLE II. EXPENDITURE ON YAWS PROGRAMME, NIGERIA, 1956

	US$
Technical Assistance	
WHO	10 000
UNICEF	70 000 *
Federal Government of Nigeria	
Eastern Region	90 000
Western Region	90 000
Northern Region	80 000
British Cameroons	30 000
Total	370 000

*** UNICEF's total contribution since the start of the programme amounts to over half a million US dollars.**

future in their approach to national independence.

The future

International help is continuing and may be needed for several more years, for there are still many problems to be solved, for instance, what should be done in areas where, at present, the establishment of rural health centres is not practicable, and how the large areas of low prevalence can be most effectively and economically dealt with by means other than total mass treatment. In connexion with the latter, and increasingly in connexion with the later stages of anti-yaws campaigns, criteria of the presence of yaws other than visible clinical manifestations are needed. It would appear that sample serological surveys offer the best possibilities and WHO is interested and active in seeking a simple test, requiring inexpensive equipment and a small quantity of blood from each person, for this purpose.

HEALTH EDUCATION IN AFRICA

Modern medicine is increasingly aware of the importance of discovering and eliminating factors of the environment that can injure the maintenance of the total well-being —physical, mental and social—which is health. This relatively new concept makes health education one of the essential elements of public health work, since health education is largely directed towards the betterment of the environment. Nowadays it is generally accepted that the collaboration of the people is a prerequisite to success in health programmes of all kinds. This collaboration cannot be secured by the mere passing of legislation, however admirably conceived in itself.

These views were put forward at a Seminar on Health Education, organized by WHO and held in Dakar, French West Africa, from 25 to 30 March 1957, for the countries of the WHO African Region. The purpose was to create an opportunity for joint discussions on the development of health education in the Region and for study of ways and means of integrating this in public health programmes.

In Africa, ancient traditions, long-standing customs, and the distrust of innovations brought into the villages from outside, all stand in the way of progress. And Africa is a continent of villages, ravaged by the forces of nature and climate and subject to most of the major ills of mankind. To help the people to help themselves is therefore a major preoccupation of the health authorities of the diverse countries and territories in this Region.

Common problems

One basic task in health education is to teach the people to make use of such existing health services as hospitals, clinics, rural health centres and mobile units used in special campaigns against specific diseases. But poor communications and transport facilities, lack of trained personnel and a high rate of illiteracy among the population are common factors that limit efforts in this direction. An overriding limitation in the poorer and more remote areas is financial stringency.

Development of health education

There was support in the Seminar for the view that health education should be the responsibility of the government, preferably exercised through the national health authorities. In view of the importance of financial issues, the greatest stress was laid on the coordination of health education efforts among all the branches of government concerned—

education, social welfare, agriculture and public works, as well as health. Voluntary agencies likely to exert some influence among the people should also be drawn in.

Up till recently, medical services in Africa have been largely concentrated in the towns. Services for rural areas should now be further developed and the need for closely allying health education work with this expansion was considered imperative.

Timing of efforts and the choice of appropriate targets were also regarded by some of the participants to be of primary importance for securing the maximum benefit from health education activities. In such a vast continent, the emphasis in public health work varies widely. Often, however, public health operations start with mass campaigns against the major endemic diseases. At this stage, health education can bring the people to recognize other public health needs and thus lay the groundwork for the growth of some form of community development.

Social and cultural factors

A deep knowledge of the social and cultural context of a people—and especially of their attitude to health and social problems—is of the utmost importance for carrying out public health measures and is essential for eliciting popular support for these. The need for the co-operation of the people in Africa is all the greater because of the lack of qualified personnel for direct public health work, the heavy cost of curative medicine—necessitating as it does greater emphasis on preventive measures— and the continual drain on national resources in fighting the endemic diseases. Since the present knowledge of African populations is far from adequate, the Seminar strongly advocated study of local social groups, to be carried out by anthropologists, with a view to determining the best approach in all health activities, educational and otherwise. This would help, it is believed, to eliminate the costly mistakes of the past where the method of presentation of certain programmes failed to elicit the support of the public.

Role of schools

There was divergence of view on the effectiveness of the health education work carried out by the schools. The point was made that frequently the curriculum needs to be revised, so as to relate the teaching more closely to the needs of rural life. Moreover, where schools are sparse, health education must be done outside them, through groups of influential men and women. Another view advanced was that health education should be an integral part of fundamental education. All primary school teachers should be given training in the subject.

Mobile health units

The possible uses of mobile health units were also a matter of divided opinion. One view was that they serve to popularize recourse to curative medicine, so educating the people in medical care as understood elsewhere, and form a useful link with the fixed rural health centres. On the other hand, it was maintained that fixed centres alone can ensure lasting and effective health education in the course of their curative and preventive work. These are the permanent points from which health education can reach out to a wide circle of villages with greater effect.

Training

There was general agreement that, apart from the professional staff centrally responsible for health education, some instruction in health education should be given to the following types of personnel, either in the basic training or at a subsequent stage: medical personnel, including physicians, nurses and midwives; auxiliary medical personnel; social workers; medico-social assistants; local midwives; schoolteachers; home economists; community development and fundamental education workers. Training of this kind for all physicians, nurses and midwives is of primary importance because, being in positions of authority, they can influence the emphasis given to health education in all

health activities. The remaining categories are all in close touch with the people and have constant opportunities of using the health education approach in their work.

In view of these recommendations, the Seminar felt there was no need for the creation of a junior grade of auxiliary health educators at the present stage of development of most of the African territories.

On the question of programme and content of training, the point was made that these should always be under the control of professional medical personnel. Moreover, the emphasis should be different in the courses for staff responsible for planning and policy in health education and for those carrying out the actual work in the field.

Attention was also drawn to the need for reviewing medical training, at all levels, with the object of inculcating special interest in public health problems from the outset. This would help to build up the public health workers so greatly needed in the rural areas.

Periodic and refresher courses for medical and auxiliary personnel already in service were also advocated.

Methods and media

Experience in the use of the divers techniques and audio-visual aids used in educational work has varied widely among the different countries. A technique found of value in one has proved a failure in another. But whatever the media preferred, there was unanimous support for making the utmost use of audience participation and for drawing on local lore and familiar illustrations in preparing spoken and recorded material. Indeed, the active participation of the people themselves should be taken as the overriding criterion in estimating the value of any technique.

THE WIESBADEN CONFERENCE ON HEALTH EDUCATION

The health worker's role in health education is to help people to " achieve health by their own actions and efforts ".[1] How health workers—doctors, nurses, public health administrators, and others—may be trained in health education; why they should work in close harmony with each other; and what methods they should use in their contacts with individuals, families and the general public, were some of the questions discussed at the Conference on Health Education held at Wiesbaden from 27 June to 5 July 1957 under the auspices of the WHO Regional Office for Europe.

Although this was a specifically European conference, attended by European experts whose chief concern was the development of health education in their own countries, it became apparent that the problems they encountered were similar to those in other parts of the world. The need to integrate health education in public health programmes was felt as keenly in Africa, for instance, as in Europe, to judge from the views expressed at the recent WHO-sponsored Seminar on Health Education held in Dakar, French West Africa, earlier this year (see article on page 313).

As stated in the opening address, health education is not directed towards one particular section of the community, nor to any one age-group. It is of importance to people throughout their lives, from childhood to old age, and should be given by every available means, and by all those called upon to guide and educate. Teachers are necessarily included in this group, and keen interest was expressed at the conference in the teaching of health education in schools. This aspect of health education was not within the purview of the conference, but several participants expressed the hope that it would be discussed at some future meeting.

It was generally agreed that health education had become an indispensable part of medicine. Diagnosis, treatment, and reha-

[1] Expert Committee on Health Education of the Public (1954) *Wld Hlth Org. techn. Rep. Ser.*, **89**, 4

bilitation of a patient cannot only be based on his physical condition, but must take into account such factors as his economic and social status, his working conditions, and family life. If he is to resume his place as a useful member of the community, the patient needs to learn how to maintain the good health which medical treatment has restored to him. Any dangerous and mistaken beliefs which he may hold—such as that tuberculosis is not infectious but hereditary; that vaccination is invariably harmful; that affliction with certain diseases is shameful and therefore better concealed—must be dispelled. In short, he must be educated in healthy living, and this is one of the main responsibilities of the health worker. The delegates to the conference agreed that health workers were, in the main, still inadequately prepared for this educative work. For this reason, the conference was particularly concerned with training in health education.

To facilitate the exchange of views and experiences, and so that agreement could more easily be reached on specific aspects of the problem, various discussion groups were formed to deal separately with the health education training of doctors, nurses, and other health workers.

The group which discussed basic medical training concluded, firstly, that health education should not be taught to medical students as a separate discipline, but should be included among the subjects of the medical school curriculum; and, secondly, that more use should be made of the hospital as a centre for health education since a great number of people came into contact with it: patients; their friends and relatives visiting or accompanying them; and persons taking advantage of various social services supplied by the hospital. Many more hospitals could and should follow the example of those of Cardiff which, since 1944, had been educating discharged diabetics in the self-treatment of their disease, with the remarkable result that the number of patients readmitted for treatment of gangrene or coma had been reduced to zero.

The general practitioner could also make a valuable contribution to health education. He dispensed not only medical treatment but advice on family and social problems, and was in a position to influence the many who considered him a trusted friend and counsellor. The example was given of an enterprising general practitioner in York who organized, for the benefit of mothers and fathers, clubs at which talks and discussions took place on such subjects as child care, juvenile delinquency, symptoms of illness, and the nursing of sick children at home. It is interesting to note that, following the setting-up of these clubs, there appeared to be a decrease in the number of children admitted to hospital in that city.

It was concluded by the group which considered the training of nurses that health education was inseparable from a nurse's work, whether with sick or healthy people, and that it was one of her most important duties. It was agreed that the principles and methods of health education should be included in the basic training of nurses, and that the most modern teaching methods should be used to ensure that nurses could in their turn effectively contribute to health education. Members of all the groups were of the opinion that nurses and other members of the health team should receive health education training jointly for at least part of the time. Such joint training could begin in hospitals, where doctors and nurses worked together, and would also be easy to arrange at advanced and more specialized levels of training in schools of public health and institutes of hygiene. In some countries, the best opportunity for inter-professional study was provided by in-service training or refresher courses. Such teamwork during training would ensure later co-operation between the different health workers, and a concerted approach to the health problems of the public.

Two of the groups discussed health education within the framework of public health. It was agreed that public health administrators—since they were responsible for formulating and implementing local and state

health policies—had a very important part to play. Not only had they to plan health education aspects of health programmes, but to stimulate interest in the subject among their professional colleagues and their staff; to educate local committees and voluntary organizations; to conduct educational campaigns; and to evaluate the results of the programmes undertaken. In order to be able to carry out these important tasks, public health administrators should receive additional training—which should be practical as well as theoretical—in the psychological, sociological, and pedagogical aspects of health education.

But not only doctors, nurses, and public health administrators should be trained in health education. Pharmacists and chemists, particularly in rural areas, were frequently asked for medical advice, and it was the opinion of several of the discussion groups that health education should be included in the curriculum of pharmaceutical students.

All groups agreed that there was a place in every country for specially-trained, full-time specialists in health education who could guide, direct, and help strengthen the educational functions of other health workers.

In conclusion, it may be said that this conference at Wiesbaden has made possible, through the free exchange of knowledge and experience, a very valuable contribution to the development of health education training. There are still problems to be solved and obstacles to overcome—not the least a lack of adequate financial support from the authorities—but although health conditions vary greatly from country to country and health programmes can be carried out in many different ways, universal realization of the importance of health education has been achieved, and its progress is assured.

MEDICAL EDUCATION

The second edition of the *World Directory of Medical Schools* has just been published by the World Health Organization.[1] Like its predecessor, which appeared in 1953, this edition supplies information about institutions for medical education in more than eighty countries. It also, however, includes additional information on the chief features of undergraduate medical training in each country.

From the beginning WHO has concerned itself with all aspects of professional education in medicine and public health. The collection of information on this subject, as a result of approaching official and non-official medical agencies can, however, merely be regarded as supplying essential raw material upon which further studies can be made. Although the scope of the new directory has been considerably enlarged, no attempt was made to establish comparisons and foresee trends of development throughout the world. The study of the many facts and figures included in the directory nevertheless leads to some interesting conclusions. In examining, for example, the situation of medical schools in various continents (Table I) a considerable diversity can be seen to exist.

Europe, one of the smallest of the continents, has no less than 253 schools for a population of over 619 million inhabitants, whilst only 16 medical schools are expected to meet the needs of over 210 millions in the land-mass of Africa.[2] As regards the proportion of medical practitioners to population, a wide divergence also exists between countries (Fig. 1). Whilst in Israel the figures show a ratio of 1 : 434, in Nepal this is 1 : 174 640.

[1] World Health Organization (1957) *World directory of medical schools*, 2nd edition, revised and enlarged, Geneva, 314 pages. Price: £1 5s., $5.00, or Sw. Fr. 15.—.

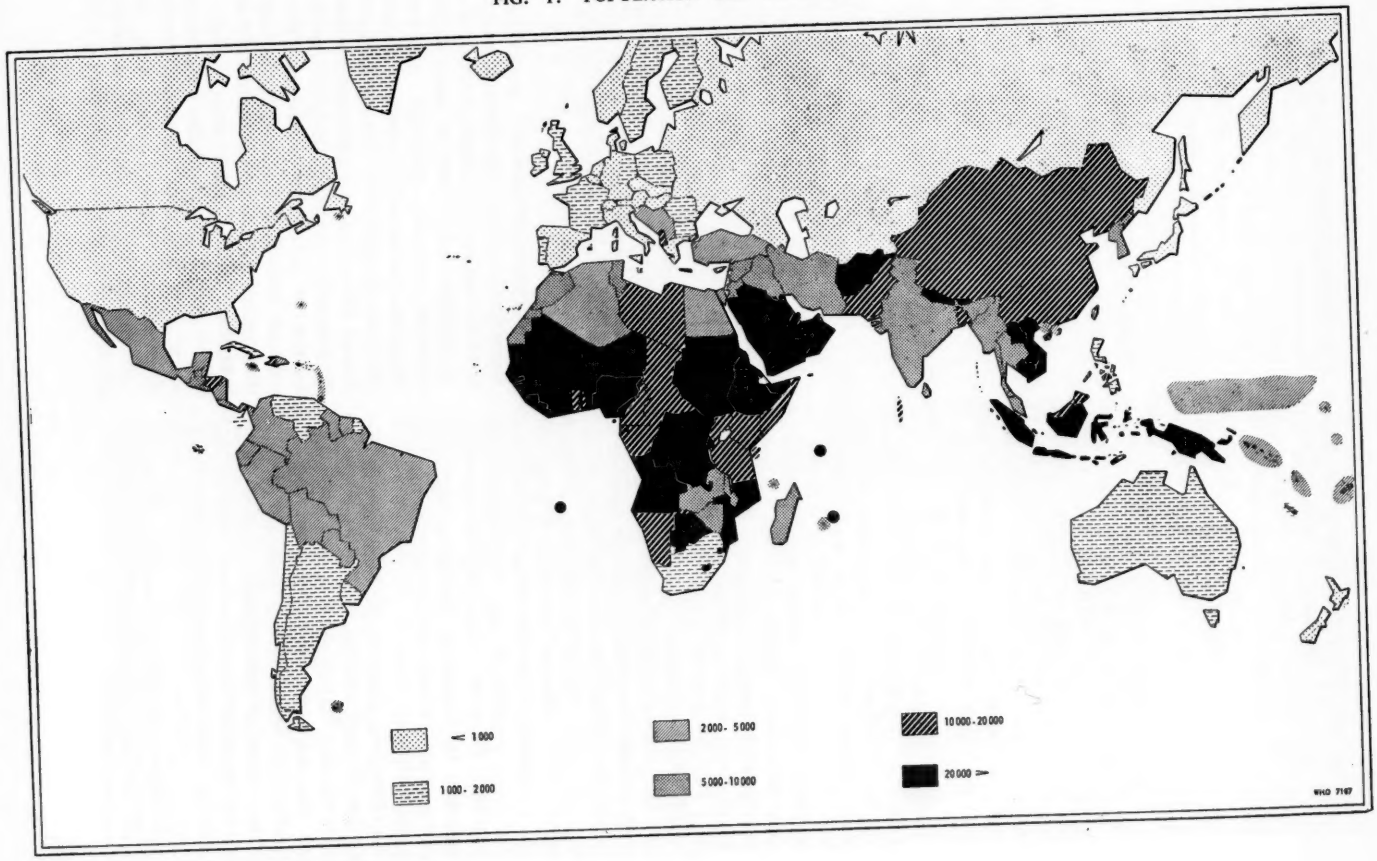
[2] Population figures taken from the *United Nations statistical year-book, 1954*

TABLE I. MEDICAL SCHOOLS AND PHYSICIANS (WORLD FIGURES)

Area	Population	Number of medical schools	Number of physicians	Annual number of medical graduates	Population per medical school *	Population per physician	Annual number of medical graduates per 1000 physicians	Population per new physician, i.e. annual graduate *
Africa	210 832 000	16	23 284	1 089	13 177 000	9 055	46.8	194 000
North and Central America	234 276 000	124	259 664	9 076	1 889 000	902	35.0	26 000
South America	121 000 000	53	48 263	5 308	2 283 000	2 507	110.0	23 000
Asia, Eastern	1 370 821 000	171	209 688	12 418	8 016 000	6 537	59.2	110 000
Asia, Western	82 529 000	15	16 951	868	5 614 000	4 869	51.0	95 000
Europe	619 707 000	253	665 522	37 222	2 449 000	931	55.8	17 000
Oceania	14 234 000	6	12 427	741	2 372 000	1 145	59.6	19 000
World total (or ratio)	2 653 399 000	638	1 235 799	66 722	4 160 000	2 147	54.0	40 000

*** Figures rounded off to nearest thousand**

FIG. 1. POPULATION PER PHYSICIAN



These are disturbing figures, since they draw attention to such a wide disparity, indicating the need for an increase in the number of physicians in certain areas, either by the importation of new doctors, by enlarging the capacity and productivity of existing medical schools or by creating new institutions.

A further study, however, of figures relating the population-to-physician ratio to that of the population to new physicians (annual graduates) in various continents, leads to more encouraging conclusions (see Table I). A comparison of the population-to-physician ratio in North and Central America with that of Africa indicates a preponderance of 10 : 1 (902 as opposed to 9055), yet this disparity is considerably lessened when the ratios of population to new physicians in the two continents are compared: the American preponderance being in this case a little more than 7 : 1 (26 000 as opposed to 194 000). In other words, the proportion of new physicians, linked with the birth-rate, indicates a substantial increase in the number of medical practitioners in Africa over the next few decades.

The Directory records *inter alia* the names and addresses of schools, their year of foundation, their ownership, and the number of physicians in the countries concerned. It can be seen from a study of the years in which schools were founded (see table below) that the extension of medical education over the centuries, gradual at first, accelerated considerably from the beginning of the nineteenth century onwards: the last decade alone saw the foundation of more than 100 medical schools.[3]

Reference is made in the Directory to the system of medical education that prevails in each country, although it must be pointed out that the term "system" in this context denotes the characteristic methods of preparing medical practitioners rather than specific medical doctrines. As was to be expected, the information supplied was detailed in the case of some institutions, incomplete for others. Certain difficulties arise in the comparative study of medical education, due to the variations in the length of courses, which range from four years in some countries to eight years in others. An understanding of the terminology of the various courses will to a certain extent help in dispelling these difficulties.

Dates of foundation of medical schools

Date of foundation	*Number of medical schools*
Before 1300	10
1300-1399	9
1400-1499	17
1500-1599	13
1600-1699	12
1700-1799	22
1800-1849	82
1850-1899	102
1900-1919	79
1920-1939	86
1940-1945	49
1946-1957	108
Total	589 *

* It can be seen that the total number of medical schools as listed in this table differs materially from that given in Table I. This discrepancy is explainable by the fact that the date of foundation was not given in each case. Also, for various reasons certain institutions have suspended their operations, and this table deals only with those which are still functioning.

The term "pre-medical" is used in some countries to denote the period preliminary to the actual study of medicine, during which the student is engaged in such subjects as chemistry, physics, biology, mathematics, languages and general culture. This syllabus will be completed either during the secondary school course, after graduation from secondary school, or during the years spent at a faculty or school of medicine. The full medical course will, however, include the time spent in the two last-mentioned establishments. The "pre-clinical" and "clinical" periods constitute the medical course proper and in some countries there is no differentiation between these two terms. "Internship" has a variety of meanings in different countries denoting either (*a*) a period

[3] Analysis of the data in this table could indicate the relationship between growth in the number of foundations and social and economic development during a selected period in the countries and areas concerned.

of hospital work immediately following graduation, (*b*) work undertaken at a hospital during the pre-clinical period or (*c*) hospital work undertaken by the student during the clinical period. Whilst the amount of time spent in either of these varies according to the different systems in operation, the term " internship " applies in most cases only to hospital work carried out after graduation (*a*). The other two periods are known generally as those of clinical clerkship (*stage de l'étudiant hospitalier*). In some countries hospital service after graduation, a period of service in a rural area, or service in some other specified type of medical practice are required before independent practice is permitted. This compulsory period is included under the general heading of " internship ".

The second edition of the *World Directory of Medical Schools* has considerably enlarged the extent, with figures necessarily revised since the first publication, of the information available to those engaged in medical education. The material will consequently enable assessments and comparative studies to be made over a wide field.

Reports of Expert Groups

MALARIA ERADICATION

The sixth report of the WHO Expert Committee on Malaria[1] is devoted to the technical and administrative principles, as well as the practical aspects, of malaria eradication. It may be regarded as a guide for drawing up programmes and selecting methods, intended for the use of the malaria control services of the continually increasing number of countries which have adopted the eradication policy advocated by the World Health Assembly.

After defining malaria eradication, which should not be confused with eradication of the disease vector, and showing that it differs radically in many respects from mere malaria control, the Committee proceeds in this report to an analysis of the theory of eradication, dealing, in particular, with the organizational problems raised by the detection of residual foci, the role of immunity in the development of epidemics, the epidemiological factors which influence the reintroduction of the disease or its renewal from small origins (origin of the epidemic, " multiplication rate " of cases and potential severity of the epidemic), the criteria of malaria eradication, and the requirements to be met by a malaria control programme in order to be recognized as a step towards an eradication campaign.

With current techniques and the considerable funds made available to governments by international organizations, the cost of an eradication programme is generally not beyond the financial possibilities of most countries. It seems, therefore, that efficient management at all levels is the factor which requires the greatest emphasis. Consequently, the report devotes considerable space to the various administrative aspects—previously somewhat neglected—encountered in any eradication programme, e.g. legislation, organization of national malaria services, budget and management of finances, functions of personnel of all grades, training of professional and non-professional groups, consolidation, maintenance.

The same desire to provide a detailed guide, based both on experience and on the most recent advances, is shown in the discussion of the other phases and aspects of the programme, e.g. the spraying campaign, prevention of breeding, drug treatment, anopheline resistance to insecticides and measures to be taken when it appears, survey techniques—

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 123. 84 pages. Price: 3/6, $0.60, or Sw. fr. 2.—. Published in English, French, and Spanish.

in particular measurement of transmission—and surveillance processes. A special section deals with problems which may in theory interfere with the success of malaria eradication, namely those arising from the behaviour of the anopheline vectors, those connected with population movements and those related to the living conditions of the people.

Finally, malaria eradication is considered in relation to other public health activities and from the viewpoint of international co-operation.

Annexes to the report include a form for collection of information on personnel employed in antimalaria campaigns, a guide for the presentation of malaria eradication programmes to governments and international organizations, and a form for data to be included in reporting the results and costs of antimalaria programmes.

FOOD ADDITIVES

The addition to foods on an ever-increasing scale of non-nutritive chemicals intended to improve their appearance, taste, consistency or keeping properties—chemicals for which it has been agreed to use the term "food additives"—has faced the public authorities with the responsibility of defining the limits within which such additives can be authorized. An initial conference, convened by FAO and WHO in September 1955, carried out exploratory work in this field and suggested that an expert committee concerned with the technical and administrative aspects of the question be convened to formulate general principles on the use of these substances.

According to the report of this Committee,[1] the use of a food additive is justified when it serves to maintain the nutritional quality of a food, to enhance its keeping quality or stability with resulting reduction in food wastage, or to make it more attractive to the consumer, or when such use is technically indispensable in food processing. The use of these substances should be prohibited when the aim is to disguise the effects of faulty processing and handling techniques or to deceive the consumer, when such substances decrease the nutritive value of the food, or when the desired effect could equally well be obtained by other and satisfactory practices.

The experts paid particular attention to the problem of protecting the consumer. In this connexion the safety for use of an additive is an all-important consideration. Authorization to use any additive should always be based on the considered judgement of qualified scientists that the intake of the additive will be substantially below any level which could be harmful. Furthermore, permitted additives should be subjected to continuing observation for possible deleterious effects under changing conditions of use. Finally, the consumer should be informed of the presence of an additive in a foodstuff—for example, by means of a declaration on the packing.

Other questions connected with the use of food additives are also considered in this report, including the restriction of the use of such substances in certain classes of food, limitation on levels of use, the need for specifications of identity, possible combined effects of food additives, the procedure to be followed for the authorization of additives, and a control system. The report also includes a certain number of recommendations to FAO and WHO.

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1957, **129**. 22 pages. Price: 1/9, $0.30, or Sw. fr. 1.—. Published in English, French, and Spanish.

TREATMENT AND CARE OF DRUG ADDICTS

The report has recently been published of the session of the Study Group on Treatment and Care of Drug Addicts, held in Geneva from 19 to 24 November 1956,[1] to examine the scientific knowledge and clinical experience on this matter and to determine principles which might be applied to the management of addicts with different etiology and pathology and in various cultural surroundings. For the purposes of the session, an addict was taken to be a person " who habitually and compulsively uses any narcotic drug so as directly to endanger his own or others' health, safety, or welfare ", and the particular drugs considered were opium, opium alkaloids and substances derived therefrom, synthetic substances with morphine-like characteristics, and cannabis substances. Where prevention was considered, it was confined to the problem of re-addiction (or relapse) of addicts who have undergone or are undergoing treatment.

Fortunately, a great number of addicts are relatively easily amenable to treatment. For instance, mass methods of treatment may be highly successful among persons whose addiction stems from more or less accidental stress, such as exhaustion, hunger or poverty; such persons would predominate in countries where the drugs used are fairly easily available and not prohibitively expensive. Good results may also be obtained with some ease in many cases of addiction due largely to social, environmental or cultural factors. Members of groups or gangs where full participation requires drug-taking may prove easily amenable to treatment when removed from the influence of the group. Again, those who have become addicted through illness may not present too difficult a problem once the illness has passed. The most difficult to treat, though the least numerous, are those who suffer from a basically pathological character structure, including such features as immaturity of character development, a desire to live only in the present, a narcissistic attitude, or a destructive, or even a self-destructive, tendency. Intensive psychotherapy is needed for such persons, and it must in each case be based on an analysis of the factors leading to the addiction. As the Study Group sums up the situation: " Viewed according to amenability to treatment, drug addiction appears to have a much less discouraging prognosis than is generally believed when only the last-mentioned group is focused into the centre of attention."

The Study Group points out that for effective treatment of addiction there must be effective limitation of the supply of drugs. In this connexion, legal provisions are of great importance; some mature patients may be allowed to submit voluntarily to treatment, but " most addicts will require some degree of coercion—preferably some kind of civil commitment to medical treatment—to induce them to desist from what is to them often a pleasurable experience ". At the same time, it is strongly emphasized that the first principle of treatment is that drug addicts should be looked upon as patients—they should be " treated medically and not punitively "—and treatment should be based on a study of the individual personality. The Group agreed that the goal of treatment is to assist the addict " to achieve a feeling of relative well-being and satisfaction and good interpersonal adjustment without drugs ", and stressed that, while complete withdrawal of the drug of addiction might be deferred in certain circumstances, " the maintenance of drug addiction is not treatment ".

Withdrawal of narcotics, however, may be gradual or abrupt, as best suits each individual case. For addiction to opium, opiates or morphine-like drugs, the majority of the Group considered abrupt withdrawal and substitution of rapidly decreasing doses of methadone to be the most effective, sim-

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 131. 19 pages. Price : 1/9, $0,30, or Sw. fr. 1.—. Published in English, French, and Spanish.

plest, and easiest technique. On the other hand, supportive therapy with such substances as barbiturates or chlorpromazine, which mask the symptoms of withdrawal, was considered unnecessarily dangerous.

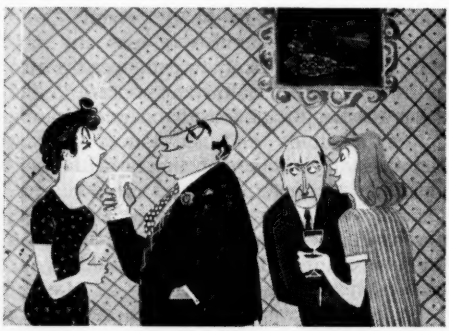
It was also felt advisable to provide a graded series of environmental conditions for treatment, ranging from the maximum security of locked wards down through open wards to a controlled environment in the home. The determination of the degree of security required in each case should be left to the judgement of the physician.

Background information on the current treatment and care of drug addicts in various countries is annexed to the report.

Notes and News

"To Your Health": animated cartoon film on alcohol

In 1955 the World Health Organization commissioned Philip Stapp, a well-known film artist, to study the reports of the Organization on problems of alcohol with a view to designing a colour cartoon suitable for general public exhibition. Mr Stapp designed and directed the cartoon. The scientific content of the film is based upon the findings of the WHO Expert Committee on Alcohol and Alcoholism and was supervised by Professor E. M. Jellinek, Consultant on Alcoholism for WHO. Animation and production were carried out by Halas and Batchelor, British animated film producers. The film, which was completed in June 1956, is in sound and Technicolor, with French, English and German versions. The showing time is ten minutes.



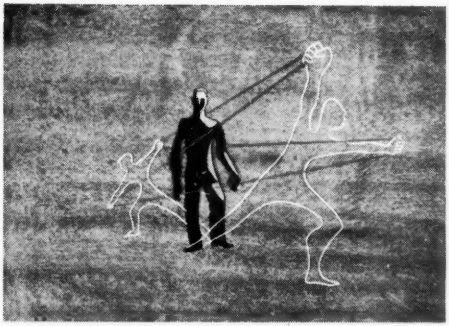
So far the film has been shown primarily to a restricted public of doctors and representatives of governmental or private bodies. It has also been presented at film festivals in Edinburgh, Venice, Cannes, Berlin, Vienna, Padua, Warsaw, Brussels, Cork and Melbourne. Its very favourable, not to say enthusiastic, reception on these occasions is a testimony to its high documentary and artistic value.

The film illustrates by a series of pictures —captivating in their beauty of line and colour, and entertaining, amusing or moving without stooping to the trite—some basic facts about alcohol. It describes the changes in alcohol as it passes through the human body, customs connected with drinking, aspects of contemporary society influencing people to use alcohol, stages in the behaviour of the alcoholic as seen from the medical standpoint, and treatment for alcoholism.

The film pronounces no judgement. It tries to state facts in a clear and understandable form which will encourage intelligent and objective consideration of alcohol and alcoholism.

"To Your Health" is distributed by the World Health Organization, It will be shown at cinemas and educational centres and on television. It may be obtained, in 16 mm or 35 mm size, on application to the Division of Public Information, WHO, Palais des Nations, Geneva, or by direct application in the following countries to bodies which have been granted distributing rights:

Americas (Canada, United States, all countries of Latin America)	Center for Mass Communications, Columbia University Press, New York
Australia	The Commonwealth National Library, Film Division, Canberra
Finland	The Academic Temperance Union, Helsinki
	Oy Alkoholiike Ab, Helsinki
	The League of Finnish Temperance Societies, Helsinki
France	Haut Comité d'Étude et d'Information sur l'Alcoolisme, Paris
New Zealand	Commonwealth Film Library, Wellington
Sweden	Centralförbundet för Nykterhetsundervisning (CFN), Stockholm
Switzerland	Secrétariat Antialcoolique Suisse, Lausanne
United Kingdom	Central Office of Information (COI), London



The pictures shown here form part of the sequence dealing with the various motives inducing people to drink. Easily picked out are: the desire to be one of the crowd; the popular regard for the man who can hold his liquor; difficulties of everyday life; personality disturbances.

Team of medical scientists visits Iran

The World Health Organization sent a "Visiting Team of Medical Scientists" to Iran in October 1957. After two weeks with the Medical Faculty of the University of Teheran, the team split into two groups which spent one week each at the Tabriz and Shiraz medical schools. The purpose of the visit was to promote an informal exchange of information and experience between the members of the team and the host faculties both on scientific subjects and on problems of medical education. Only a small amount of formal lecturing or teaching was done. During the past ten years, teams of this kind have visited universities in Austria, Burma, Ceylon, Czechoslovakia, Egypt, Finland, Germany, Greece, India, Indonesia, Iran, Israel, Poland and elsewhere. Their visits were invariably successful and profitable to visitors and hosts alike.

The team visiting Iran consisted of: Dr L. Kreyberg, Professor of Pathology, University of Oslo; Dr R. E. Tunbridge, Professor of Medicine, University of Leeds; Dr P. W. Duchosal, Professor of Cardiology,

University of Geneva; Dr A. Wallgren, Professor Emeritus of Paediatrics, Karolinska Institutet, Stockholm; Dr S. B. Wortis, Professor of Psychiatry, New York University; Dr Sven Hellerström, Professor of Dermatology, Karolinska Institutet, Stockholm; Dr E. Husfeldt, Professor of Surgery, University of Copenhagen; Dr W. Dam, Director of Anaesthesia, Bispebjoerg Hospital, Copenhagen; Dr H. Osmond-Clarke, London Accident and Orthopaedic Hospital; Dr W. J. E. Jessop, Professor of Preventive Medicine, Trinity College, Dublin; and Dr E. Grzegorzewski, Director of the Division of Education and Training Services, WHO. A detailed schedule of activities was drawn up by a Preparatory Committee in Teheran, which arranged for the team-members to work in close contact with Iranian specialists in their respective fields.

Colloquium in Austria on WHO national committees

Delegates from WHO national committees who attended a colloquium in Kitzbühel, Austria, from 25 to 30 May 1957, expressed appreciation of the programme of work laid down by the Tenth World Health Assembly on health problems arising out of the peaceful uses of atomic energy. The colloquium also passed a resolution urging WHO national committees and health committees of United Nations national associations to give their utmost support to this particular activity of WHO.

The main items especially endorsed by the colloquium include: the training of radiation health physicists and of experienced medical personnel in the health aspects of the peaceful uses of atomic energy; intensified research on the genetic effects of radiation and on problems of radioactive waste disposal; and research on the influence of the advent of atomic energy on mental health and social conditions.

The colloquium, which was organized by the WHO Committee of the Austrian United Nations Association, studied ways and means of encouraging the establishment of WHO national committees and of developing their activities. It may be recalled that the Third World Health Assembly in 1950 sanctioned the establishment of these national committees in recognition of the real need to promote widespread understanding of the aims, objectives and achievements of WHO.

Dr A. H. Taba takes over direction of WHO Eastern Mediterranean Regional Office

In September 1957, Dr A. H. Taba became Director of the WHO Eastern Mediterranean Regional Office in Alexandria, succeeding Dr Aly Tewfik Shousha, who directed this Office from its establishment in 1949 until his retirement in August 1957.

Dr Shousha, who has had a long and distinguished career in international health, was born in 1891 in Egypt and, at the age of 16, was awarded a fellowship to study bacteriology in Berlin. Subsequently, he worked for four years in the public health department of the University of Basle, Switzerland, specializing in bacteriological research. He then returned to Egypt, eventually to become Director-General of the Cairo Laboratories, where he carried out important research on cholera, the bacteriological diagnosis of tuberculosis, and blood groups, among other subjects.

Dr Shousha was responsible for the conception and planning of the Agouza Serum and Vaccine Institute, Cairo, At the beginning of World War II he was named Assistant Under-Secretary of State for Health, and, in 1941, Under-Secretary of State for Medical Affairs. In the latter capacity he organized the campaign against cholera in Egypt in 1947. In 1946, as representative of Egypt, he was one of the 18 persons who drafted the constitution of the World Health Organization, and in 1948, after that constitution had been ratified, Dr Shousha was elected Vice-President of the First World Health Assembly and Chairman of the Executive Board, 1948-1949. In 1949 he was appointed Director of the new Eastern Mediterranean Regional Office.

His successor, Dr Taba, was born in

Teheran, Iran, in 1912 and was educated at Sarvat College in Teheran and at the Universities of Birmingham and London. During his undergraduate and post-graduate career, he was awarded a number of academic prizes and distinctions. In Iran, he was Director of Health and Chief Surgeon on the Iranian State Railways. He completely reorganized this service, generally recognized in Iran and elsewhere as a model health organization. He was a pioneer in the introduction of DDT spraying as an antimalaria measure in Iran.

In addition Dr Taba was a member of the Iranian Parliament from 1946 to 1951 and President of its Health Commission. He also served as Director General of Health; Honorary Chairman of the International Health Relations Department, Ministry of Health; member of the Health Committee, Imperial Organization of Social Services, and as member of the Supreme Health Council, Teheran. He was his country's chief delegate to the Third, Fourth and Fifth World Health Assemblies in Geneva as well as Vice-President of the Fourth World Health Assembly and of the WHO Executive Board, Tenth Session. He joined WHO in 1952 as Deputy Director of the Eastern Mediterranean Regional Office, a post he held until he took over as Regional Director.

People and Places

Appraisal of techniques for serological tests

The techniques used in serological surveys for syphilis during campaigns against treponematoses should be as simple as possible. WHO has accordingly invited Dr Peter Krag, Director of the WHO Reference Centre, Statens Seruminstitut, Copenhagen, to undertake at WHO Headquarters an appraisal of such techniques and particularly of those requiring only small quantities of blood that can be obtained by skin puncture. Dr Krag will also review serological work being carried out in present campaigns against treponematoses.

Institute of Occupational Health opened in Egypt

WHO is encouraging the establishment of institutes of occupational health which can be of service to national health and labour authorities and private industry, as well as stimulating general interest in this field. To be effective, such centres should as far as possible be attached to a school of public health, or a university.

An institute of this type was recently opened at the High Institute of Public Health, Alexandria, Egypt. Its aims are to train technical personnel for occupational health services in Egypt and other countries in the Eastern Mediterranean Region, to make field investigations on local occupational health problems, and to conduct applied and basic research in occupational health.

Dr Leonard J. Goldwater, Head of the Department of Occupational Medicine at the Columbia School of Public Health and Administrative Medicine, New York, will participate in this project to advise on the organization of the Institute of Occupational Health and give lectures on industrial hygiene to the students.

Dr Goldwater has been active in occupational health for the past 25 years. He is a member of the WHO Expert Advisory Panel on Occupational Health, and has participated in several international meetings, including those of the Joint ILO/WHO Committee on Occupational Health. In 1952, he undertook a short assignment as a WHO medical consultant to carry out a survey of occupational health services in Yugoslavia.

Pilot rural health unit in Lebanon

WHO will assist the Government of the Lebanon to develop its rural health services by setting up a pilot health unit covering communicable disease control, environmental sanitation, maternal and child health, ambulatory medical care, health education and laboratory work. Operating in a single local government area, the unit will be of a type which can subsequently be duplicated throughout the country. The WHO team for the pilot unit will include a public health administrator, a maternal and child health physician, and a public health nurse.

Dr Chakir Ameur, Director of Public Health, Maine-et-Loire, France, arrived in Lebanon in September to take up a two-year appointment as public health administrator on the WHO team. A recipient of the Silver Medal of the French Academy of Medicine for outstanding work in the control of leprosy, malaria, syphilis and trachoma in Algeria, Dr Ameur has held various posts in the Department of Public Health in France, where he has continued his epidemiological work, particularly in tuberculosis.

Public health engineer assigned to Burma

A public health engineer has been assigned by WHO to Rangoon, Burma, to assist the Ministry of Health in developing a practical programme of environmental sanitation, to advise the Government on programmes of housing and suitable control measures in problems of food and milk distribution, and to advise in various aspects of public health engineering.

Mr Louis J. Lovelace, of Haiti, has been selected by WHO for this assignment. A graduate of the Harvard School of Sanitary Engineering, Mr Lovelace has had long experience in public health engineering in his own country.

Environmental sanitation programme in Tunisia

To assist the Government of Tunisia in developing a national programme of environmental sanitation, WHO has sent a special consultant—Mr Romeo Mondello, of Canada—to Tunisia for a period of three months.

Mr Mondello has been associated with the Quebec Ministry of Health as a sanitary engineer for 15 years, and is a professor in the School of Hygiene at the University of Montreal.

Health problems arising from urbanization

Prominent among public health problems are those caused by the rapid migration of population from rural to urban areas, particularly in underdeveloped countries. These problems are closely related to the broad subject of industrialization and productivity and, for a number of years, have been the concern of the United Nations and certain of its specialized agencies, including FAO, ILO, UNESCO and WHO.

WHO has accordingly appointed Dr F. A. Donnolly, of Northern Rhodesia, to study health problems arising from urbanization in a number of representative cities, for a period of three months, starting 2 September 1957.

Dr Donnolly is the Medical Officer of Health, Lusaka, Northern Rhodesia. He was previously Medical Officer of Health in the cities of Pretoria and Springs, and Deputy Medical Officer of Health in Johannesburg, where the movement of persons from rural to urban areas has long been an important public health problem.

Nursing Education Team in Alexandria

The WHO Nursing Education Team at the Higher Institute of Nursing, University of Alexandria, Egypt, has the task of providing nursing leaders with training in instruction, supervision and administration. The Alexandria Institute is the only University School of Nursing in the area, and is attended by student nurses from several countries in the Middle East.

The newest member of the WHO Nursing Education Team at Alexandria is Miss Willa J. Routledge, a graduate of Saskatoon City Hospital School of Nursing, Saskatchewan, Canada, who will be more specially concerned with clinical teaching. Miss Routledge was previously assigned by the Colombo Plan to work for two years with the WHO Nursing Education Team in Hyderabad, India. Her experience includes nursing supervision, clinical teaching and public health.

Crippled children in Japan and Korea

Dr Marcia Hays, Chief of the Bureau of Crippled Children's Services, State of California Department of Public Health, San Francisco, is visiting Japan and Korea on behalf of WHO in October and November of this year, for the purpose of advising on rehabilitation measures for crippled children.

Dr Hays is already acquainted with Japan and her services have been specially requested by the Japanese Government. She will revisit the National Crippled Children's Hospital, near Tokyo—an institution which has benefited from WHO and UNICEF aid over a period of years. The special object of her visit on this occasion is to discuss with the Japanese health authorities the medical, vocational and educational aspects of cerebral palsy rehabilitation and the organization of vocational guidance and training for crippled children.

In Korea, Dr Hays is to visit the National Rehabilitation Centre in Tongnae, near Pusan. She will make recommendations on the Korean Government's programme for crippled children.

Health education in Pacific territories

Following a joint field survey carried out in early 1956 in several Pacific territories by the WHO Regional Office for the Western Pacific and the South Pacific Commission, it was decided that the staff of the South Pacific Commission's headquarters in Noumea, New Caledonia, should include a WHO health education consultant. Mr Alfred L. Scherzer, of the USA, has been appointed to this post, and took up his duties in July. His principal responsibilities include assisting in: the planning and conduct of training courses in health education, the planning and establishment of health education services in various territories, the development of health education in schools and of health education materials.

Mr Scherzer has already served as WHO health education adviser with the Ministry of Health in Ceylon. A former member of the teaching staff of the School of Public Health, Columbia University, Mr Scherzer has also served as US International Co-operation Administration health education adviser to the Directorate of Health Services in Burma.

Health survey of La Réunion

A team of WHO public health staff is at present assisting the governing authorities of the Island of La Réunion—a Department of France situated in the Indian Ocean east of Madagascar—in making a general health survey of the island. The purpose of the survey is to provide the basis for an effective programme to improve the health of the island's 260 000 inhabitants. The latest addition to the WHO team is a public health engineer in the person of Mr Tomás Navia, of Bolivia, who took up his duties at the beginning of October. Mr Navia has had extensive experience of health engineering in Bolivia.

Geneticist to advise Indian Malaria Institute on insect resistance

For several years, the Malaria Institute of India has been conducting experiments on the induction and loss of resistance to DDT and BHC by the *Culex fatigans* species of mosquito. At the request of the WHO Regional Office for South-East Asia, Dr Hannes Laven, of Germany, a specialist on *C. fatigans*, will go to Delhi in November to advise the Institute on the genetics of resistance to insecticides in this species. Dr Laven is at present attached to the Max-Planck-Institut in Tübingen, and has previously conducted research in Berlin and the United States of America.

New book on the work of WHO in preparation

Mr Ritchie Calder recently spent a month at WHO Headquarters preparing a book on the work of WHO, to be published in connexion with its forthcoming tenth anniversary. This account, for the general public, will highlight by text and illustrations the events and problems which have given WHO its present character.

Mr Calder is well acquainted with the work of the Organization since its foundation. At the invitation of WHO, he undertook an information mission to South-East Asia in 1952; this was extended to include the activities of FAO, UNESCO, ILO and UNICEF. The mission resulted in his book *Men Against the Jungle*, and in the UN/BBC radio series *Men Against Disease*, *Men Against Hunger* and *Men Against Ignorance*. Mr Calder is also the author of *The Lamp is Lit: The Story of the World Health Organization*.

WHO Headquarters appointment

Dr Wiktoria Winnicka, of Poland, has been appointed Chief of the Maternal and Child Health Section at WHO Headquarters. A graduate of Lwow University, Dr Winnicka was liaison officer for child care between the Polish Government, UNNRA and the United Nations, and pursued further studies in this field in the United States of America under an UNRRA fellowship. Dr. Winnicka was Chief of the Observation Clinic of the Institute of Maternal and Child Health in Warsaw, and succeeds Dr Jessie Bierman, who has resumed her post as Professor of Maternal and Child Health at the School of Public Health, Berkeley, California.

New Nursing Officer for South-East Asia Region

Miss Frances E. Lillywhite has been appointed Nursing Officer in the WHO Regional Office for South-East Asia, New Delhi. Her duties will include participation in the planning of the WHO nursing programme in the region, advising national health administrations in regard to nursing and midwifery training and service programmes, the selection of nursing and midwifery personnel for WHO-assisted programmes, and advising on the selection of candidates for nursing fellowships and on their study assignments.

Miss Lillywhite has for the past few years been Superintendent Health Visitor with the Buckinghamshire County Council with responsibility for the planning and administration of the county's public health nursing and health education services. She has had wide experience in public health nursing and midwifery, including nursing supervision and administration.

WHO nurse educator for Iran

The WHO Nursing Education Team at present working in Iran has recently been reinforced by the arrival of Miss Norrie E. Yamanaka, of Canada.

The team is engaged in teaching student nurses at the School of Nursing located at Rey and Miss Yamanaka will be taking part in this work and will

also assist in refresher courses for trained nursing staff, aimed at improving nursing service so that it may provide a better basis for student clinical teaching experience. The final objective of the whole programme will be attained when the Iranian staff has acquired the knowledge and experience needed to take over the teaching programme.

Miss Yamanaka has already served in a similar capacity with the Nursing Education team in Hyderabad, India, to which she was assigned by the Colombo Plan. Prior to taking up international work, she had experience as a nursing supervisor, head nurse and nursing instructor in schools of nursing in Canada.

Health statistics work in Thailand

Reliable health statistics, by keeping health authorities informed on the amount of morbidity and mortality caused by various diseases, can enable preventive action to be concentrated where it is most effective. This holds good for both national and international health work and the fact that adequate statistics are not as yet available for the areas of the world where the health needs are greatest largely explains why the Organization lays special emphasis on the improvement of health statistics.

WHO's efforts are directed primarily to the improvement of national health statistics services and one of its latest projects of this kind is being carried out in Thailand, where Mr Henry H. Hamtoft, of Denmark, recently arrived to start a two-year assignment on behalf of WHO.

Mr Hamtoft will be working in close collaboration with the Director of the country's Division of Vital Statistics as Statistician and Adviser. He comes to the Organization from the National Health Service of Denmark, where he has been especially associated with the National Health Morbidity Survey.

Review of WHO Publications

International Sanitary Regulations, World Health Organization, Geneva, 1957. 129 pages, index. Price: 5/–, $1.00, Sw.fr. 3.—

The annotated edition of the International Sanitary Regulations, which has just been published by the World Health Organization, is designed primarily to meet the practical requirements of port and airport health officers and others concerned with the application of the Regulations.

The International Sanitary Regulations were drawn up to revise and consolidate the provisions of the various International Sanitary Conventions and similar arrangements. Their aim is to ensure the greatest possible protection against six of the most dangerous epidemic diseases (yellow fever, cholera, plague, smallpox, typhus and relapsing fever) with the minimum of interference with international traffic. Under the Constitution of the World Health Organization, States Members of WHO automatically become parties to the Regulations or to any revision of them, unless they make specific rejection or reservation within a stipulated time.

Since their adoption by the World Health Assembly in 1951 the Regulations have been three times amended—in respect of the yellow fever provisions, the form of the International Certificate of Vaccination against Smallpox, and the special provisions concerning the sanitary control of pilgrim traffic (these last, which were of a transitional nature, being deleted). On 1 July 1957 some 160 States and territories were bound by the Regulations, the majority having accepted them without reservations.

In this volume the various articles of the Regulations are annotated to show States and territories that have submitted reservations, the text of the reservations being reproduced in an annex. Another useful feature is the inclusion, in footnotes under the articles to which they refer, of the various observations and interpretations made by the WHO Committee on International Quarantine in its annual review of the functioning of the Regulations.

The volume contains among other annexes a table showing the position of individual States and territories with respect to the Regulations.

World Directory of Medical Schools, 2nd edition, revised and enlarged, World Health Organization, Geneva, 314 pages. Price : £1 5s., $5.00, Sw. fr. 15.—

For an article on this publication and the conclusions which may be drawn from the facts and figures it contains, see page 317.

Bulletin of the World Health Organization, 1957, Volume 16, Number 3 (pages 481-706)

An extensive article on this number of the *Bulletin*, which deals with onchocerciasis and filariasis, will be published in a forthcoming issue of the *Chronicle*. The table of contents is as follows :

Introduction

Factors in the pathogenesis of ocular onchocerciasis—*R. Kirk*

New observations on ocular onchocerciasis: related pathological methods and the pathogenesis of the various eye lesions—*F. C. Rodger*

Bionomics of the vectors of onchocerciasis in the Ethiopian geographical region—*Botha de Meillon*

Simuliid vectors of onchocerciasis in Guatemala—*J. Romeo de León*

Observations on the chemotherapy of onchocerciasis in Bahr el Ghazal Province, Sudan—*M. H. Satti & R. Kirk*

DDT-treatment of rivers for eradication of Simuliidae —*J. P. McMahon*

Epidemiology of filariasis in India—*N.G.S. Raghavan*

The distribution of bancroftian filariasis in Africa—*F. Hawking*

Filariasis in the Sudan—*R. Kirk*

Outbreak of filariasis (*Wuchereria malayi*) among French and North African servicemen in North Vietnam—*H. Galliard*

Bionomics and control of *Culex pipiens fatigans* Wied. in Ceylon—*C. Y. Chow & E.S. Thevasagayam*

An effective programme for the control of filariasis in Tahiti—*John F. Kessel*

Notes

The pathogenicity of *Onchocerca volvulus* in relation to lymphadenopathy and elephantiasis—*Donald L. Augustine*

The problem of the *Simulium neavei* complex—*Paul Freeman*

Simuliidae and their relation to onchocerciasis in the Sudan—*D. J. Lewis*

Les simulies et l'onchocercose en Somalie—*Salvatore Zuretti*

Notes and observations on onchocerciasis in Guatemala—*Francisco Díaz*

Resistance of *Onchocerca volvulus* microfilariae to diethylcarbamazine—*L. Vargas & J. Tovar*

Evaluation of new onchocercidal drugs used in Guatemala—*J. Romeo de León*

Notes on the taxonomy and bionomics of certain filariasis vectors—*P. F. Mattingly*

A note on the survival of the microfilariae of *Mansonella ozzardi*—*Luis Mazzotti & Eugenio Palomo*

Observations on filariasis in Sarawak and Brunei—*Julián de Zulueta*

Bulletin of the World Health Organization, 1957, Volume 16, Number 4 (pages 707-890)

In an article on sanitary engineering and water economy in Europe, W. F. J. M. Krul deals with the main problems arising from increasing consumption of water : balance between available resources and water needs, accumulation of reserves in periods of high flow, establishment of a balanced system of purification and prevention of pollution, and co-operation between interested bodies at various levels. Water economy should be co-ordinated for the whole of a river basin at the provincial or State level, and in some cases even at international level. In this connexion the author examines the regulation of the waters of the Rhine and some of the problems involved.

Pollution and purification *en route* in sandy soils, with particular reference to the Netherlands, is discussed by J. K. Baars, who has examined the consequences of severe pollution of the surface layers with matter concentrated in a small volume of water, and of moderate pollution of the surface layers with matter contained in large quantities of water. The artificial recharge of ground water by infiltration through sand dunes is a method in increasing use, and the author refers to the system of intermittent infiltration used by the town of Leyden. The self-purifying capacities of sandy soil due to mineralization of organic matter and adsorption of bacteria, and the production

of free oxygen by algae in storage reservoirs, are examined.

The pathogenesis of epileptic and hysterical seizures is discussed by E. E. Krapf, who considers that, behind the reactions manifested in consciousness and motility, there lies a fundamental function of defence, and that the nature of the seizures is decided by the level of physiogenic or psychogenic regression prevailing in different cases. He holds that the pathogenesis of "epileptiform" seizures is of a truly psychosomatic nature and that this circumstance should be reflected in the therapeutic approach to these disorders.

Several methods have been advanced for refinement of the conventional infant-mortality rate by relating the deaths to the corresponding annual birth cohorts. V. Kannisto has tested the accuracy of these "refinement" methods and discovered that they give unpredictable and relatively unsatisfactory results. They can therefore not be recommended for indiscriminate routine use.

This number also contains a study on the epidemiology of cholera by Dr R. Pollitzer; this is the tenth in a series of cholera studies contributed to the *Bulletin* by this author.

Finally, notes are included on the following subjects: Effect of DDT selection pressure on the frequency of chromosomal structures in *Anopheles atroparvus* (G. D'Alessandro, G. Frizzi & M. Mariani); Controlling flies on dairy cattle and in dairy barns (E. F. Knipling & W. C. McDuffie); Toxicity of three organic phosphorus insecticides to houseflies and mosquitos (A. B. Hadaway & F. Barlow); Assessment of susceptibility to insecticides in anopheline mosquitos (Malaria Section, WHO).

Bulletin of the World Health Organization 1957, Volume 16, Number 5 (pages 891-1082)

This issue, which is devoted to communicable diseases, covers such diverse subjects as studies on typhoid vaccines and the role of flies in the spread of seasonal conjunctivitis.

Although typhoid vaccines have now been in use for over 50 years, their real protective value for man has never been subjected to a strictly controlled trial. The first field trials of typhoid vaccine, carried out in the British Army between 1904 and 1908, are open to criticism on the grounds of imperfect comparability between the vaccinated and unvaccinated groups, yet the results they gave have long been regarded as convincing proof of the effectiveness of the vaccine. Experience during the First and Second World Wars gradually made it clear that no realistic estimate could be made of the efficacy of typhoid vaccines; nor was it possible to say which method of preparation was the best or whether the protection afforded to man could be related to the results of existing laboratory tests. When, after the Second World War, the Government of Yugoslavia decided on vaccination as the principal method of typhoid control in that country, it appreciated the need for more reliable information on these points and asked the World Health Organization for advice and guidance. The result of consultations was a decision to carry out the first strictly controlled field trial of typhoid vaccine. The first article in this issue of the *Bulletin* is a preliminary report by the Yugoslav Typhoid Commission on that trial, which well illustrates the value of international co-operation—in this case between the Yugoslav Government, WHO, and the United States Public Health Service. Such co-operation not only ensured the effective conduct of the trial but has made it possible to disseminate the findings of the experiment in many countries faced with the same problem and to plan future work in such a way as to ensure the comparability of the results.

Two types of vaccine were compared in this trial—alcoholized and the older phenolized type. Of the two, the phenolized vaccine proved the more effective, giving protection in about 70% of the persons vaccinated, but the Commission points out that the results do not necessarily mean that the same degree of protection would be obtained with other batches of either vaccine.

The second paper in this issue is concerned with relapsing fever in Jordan. In the official statistics for the years up to 1953 the vector of relapsing fever incriminated in that country was the louse, but in 1954 B. Babudieri conducted an investigation which has shown the disease there to be spread very largely by the tick *Ornithodoros tholozani*. This has naturally altered the whole aspect of the problem of control, for which certain procedures are suggested. Indeed, control of the vector ticks—a matter of considerable importance in its own right—assumes added importance in view of the possibility suggested by some authorities that the tick-borne disease may be able to transform itself into the louse-borne form. Should that prove to be so, the crowded refugee camps in Jordan and the neighbouring countries, where lice abound, might be seriously threatened with disease and might themselves constitute a menace for other elements of the population of those countries.

The epidemiology of *Brucella*, particularly growth characteristics, is a very important segment of the study of brucellosis throughout the world. Epidemiological and clinical studies in brucellosis depend upon isolation of the organism and subsequent study of its characteristics. I. F. Huddleson presents the results of his study of factors in culture medium and in blood affecting the isolation and growth of *Brucella*. This is a continuation of a series of studies Dr Huddleson has been making on this particular problem.

In 1955 one number of the *Bulletin* (Vol. 13, No. 3) was devoted to methods of immunization against a number of communicable diseases, diphtheria among them. Further consideration is given to that disease by A. Tasman and H. P. Lansberg in the issue under review. In the first part of their article they survey the results achieved with active immunization in various countries, concluding that large-scale immunization consistently carried out has greatly contributed to the virtual eradication of diphtheria in countries such as Canada, Denmark, England and France. The authors then deal at length with problems of the pathogenesis and therapy of the disease and, finally, put forward their views as to its cause, the measures to be taken for its control, and the most satisfactory form of treatment.

Trachoma is one of the communicable diseases to which increasing international attention and effort have been devoted since the development of promising modern methods of treatment. The reduction of the incidence of trachoma and its eventual elimination as a public health problem are aims that have long been pursued, and recent years have seen definite advances made in both laboratory research and control. WHO-aided trachoma control campaigns have given encouraging results in Europe, North Africa, Taiwan and elsewhere. Seven of the contributions to this issue are concerned with various aspects of trachoma and allied diseases—chemotherapy (G. B. Bietti), diagnosis (P. Thygeson), the role of flies in spreading these diseases (G. Ponghis), racial and regional differences in epidemiology (P. Guerra), antigenic aspects (G. B. Bietti, B. Babudieri & M. R. Pannarale), and clinical and epidemiological aspects (S. Poštić and A. A. Siniscal).

Two other communicable diseases are also dealt with in this issue. A. M.-M. Payne presents a note on a matter very much in today's news, the controversial subject of vaccination against poliomyelitis with live virus vaccines; and R. R. Willcox and T. Guthe report on the replies received from 25 maritime countries to a questionnaire sent out by WHO on the management of venereal diseases in ports.

Finally, there is a comprehensive bibliography of the literature on leishmaniasis published between 1950 and 1955.

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In proposing the adoption of an index of endemicity, S. Swaroop uses cholera mortality rates by district in India in order to define the terms "endemic" and "endemicity". The index he suggests is an average figure

based on one-third of the total number of years showing the lowest annual mortality (or morbidity) rates, and refers only to diseases manifested in man. Despite its limitations, it provides an objective, numerical method of evaluation, permitting areas to be categorized as " endemic " and further classified into degrees of endemicity.

G. Mandahl-Barth attempts a classification of all described species of African *Biomphalaria* (snail intermediate hosts of Schistosoma). For each recognized species and subspecies, he states the distinguishing characters, indicates the geographical distribution, and gives a list of synonyms. The article is illustrated by 15 plates.

Recent studies have revealed that trachoma is widespread in Western Australia and the Territory of Papua and New Guinea—regions where the disease had long been considered as rare. In a study on the origins of trachoma in Australasia and the means by which it was introduced, Ida Mann concludes that the disease was not originally endemic in New Guinea, but was introduced barely a century ago by European settlers and imported Chinese labour. The theory of importation also holds good for the Australian mainland, where the prevalence and severity of the disease are much greater than in Papua, New Guinea and the neighbouring islands, because the area was settled earlier and the disease is now implanted there. The author describes trachoma surveys carried out in Australasia and the various clinical stages of trachoma observed.

The use of chemicals to eliminate the snail intermediate host of bilharziasis would be even more effective if more were known about the physical properties—such as dispersion characteristics—and the biological action of molluscicides. J. W. Klock and his coworkers have applied sodium pentachlorophenate at various dosage levels and by different techniques to the breeding-places of *Australorbis glabratus* in Puerto Rico. They observe that treatments at low concentration from 3 to 4 weeks apart show promise as an effective ovicidal measure.

The resistance of insects to insecticides is developing so rapidly that attempts at insect control may fail if they continue to be based on empirical methods alone. In the opinion of L. E. Chadwick, who writes on the physiology of insecticide resistance, three to four times the present number of research workers are needed, with adequate methods of dosage and identification, to explain the facts as they arise. The author gives an account of present knowledge of insecticide action and resistance mechanisms, and stresses the need for an expansion of basic studies on the ecology, biology and physiology of insects. So far, insufficient importance has been attached to basic studies, whether to find a remedy for resistance or to hold it in check.

CORRIGENDUM

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Page 190, right-hand column, penultimate paragraph, line 5, *delete* anatoxin.